Paint Technology Has Changed with the Times

By: Dale C. Maley
For: FairburyNews.net
Date: September 15, 2025

The earliest widely accepted evidence of humans using paint dates to about 51,200 years ago, in the Leang Kpuang limestone cave, South Sulawesi, Indonesia. These cave paintings depict wild pigs and human-like figures painted with natural mineral pigments.

Many dictionaries define paint as a colored substance that is spread over a surface and dries to leave a thin decorative or protective coating. Paint recipes always include three different types of ingredients.

The first ingredient in paint is a pigment that gives the paint its color. The earliest pigments were naturally occurring rocks that were crushed into powders. Other natural substances used for early pigments included minerals and plants. The pigment is the primary visual element in paint.

The pigments can not be applied in powder form. The powder requires a binder to hold it together while the paint is being applied. The second key ingredient for paint is the binder. This material binds the pigments together while they are applied. Historically, binders have included animal fat, egg, milk proteins, oils, gums, and resins.

The third key ingredient in paint is a solvent or thinner. It dissolves or suspends the binder with the pigments. They allow the adjustment of the paint thickness for application, and they aid in the paint drying. Water is often used for water-based paints, and turpentine or mineral spirits for oil-based paints. In early paints, sometimes the binder and the solvent were the same material.

The Indonesian cave paintings, featuring red-colored wild pigs and humans, utilized the red ochre found in the region as their pigment. They ground the material into a powder and mixed it with natural materials like animal fat or plant sap as the binder. The binder materials were also the solvent ingredient in their paint. They likely applied this paint using their fingers or brushes made from animal hair or plant fibers. These bright red cave paintings have lasted for more than 50,000 years.

The first settlers in Livingston County were Valentine and Rachel Darnall. They settled on what is now Indian Creek about seven miles south of Fairbury. All of the early settlers first built a log cabin because there were no sawmills available to make boards. As sawmills became available, these early settlers often built a new wood-framed house with wood siding. These early settlers did not worry about painting their log cabins or early framed houses.

In 1857, the Peoria & Oquawka Railroad laid its tracks from Peoria to Indiana, and Fairbury was founded. Once the railroad was in place, materials for making paint could be brought in using rail cars and then sold in early Fairbury stores.

By the 1860s, some farmers built wood-framed barns with wood siding. To keep their barns from rotting in the weather, they would paint them red. A farmer would start the paint preparation process by collecting rust (iron oxide) from rusty farm equipment or nails. This pigment colored the paint a deep red and acted as a fungicide to protect the wood from rotting.

The binder and solvent for this red barn paint was linseed oil, which came from flax seeds. The linseed oil could be brought in by the railroad and sold in Fairbury stores. Sometimes milk and lime were added to improve the paint's durability and for quicker drying.

The mixture was stirred up and then brushed on thickly, soaking through the rough wood. This early paint mixture gave the barn a deep red color. The paint was made in small batches and had to be shaken up often to keep the pigments in solution.

By the 1870s, there were quite a few wood-frame houses in Fairbury with wood siding. Commercially made premixed paint was not yet available in that era. Homeowners had to buy the ingredients and mix up their own paint in batches. The color choices were somewhat limited and included white or several earth-tone colors like brown, red, mustard, and green. The exterior of most houses was painted in a two-color scheme, with the siding being one color and the trim a different color. The historic Strevell House in Pontiac, built in 1857, was found to have the original paint scheme of red on the wood siding with white trim.

For these 1870s paints, the pigment was white lead for a white color and natural minerals such as ochre, sienna, and umber for the colored paints. The pigments were ground into a fine powder using a stone muller. The binder was linseed oil, and sometimes turpentine was added as a solvent.

When freshly applied, white lead paint appeared clean, bright, and durable-a true white not achievable by umber or earth pigments. In the 1870s, the adverse health effects of lead were not yet known. White lead paint was the most popular paint for houses until safer alternatives replaced it.

The first U.S. patent for "ready-mixed" paint was granted in Ohio in 1867. Re-sealable metal paint cans were invented in 1877. By the 1880s, ready-mixed paint was manufactured on an industrial scale and distributed to paint stores across the United States. Homeowners in Fairbury could purchase national brands of premixed paints in cans, and they moved away from hand-mixing pigments and oils on-site. This transformation meant Fairbury homeowners had access to a broader range of colors, higher consistency, and greater convenience when painting their homes.

Starting in the 1880s, white exterior house paint was made in factories using white lead as the pigment, linseed oil as the binder, and turpentine or mineral spirits as the solvent.

By the 1920s, the hazards of using white lead as a pigment were starting to be recognized. Zinc oxide began to replace white lead in exterior white paints. By the 1950s, alkyd resins (synthetic oil-based binders) replaced natural oils, making paints more weather-resistant and easier to use.

By the 1970s, latex water-based paints were introduced as an option for oil-based paints. Latex offered several benefits, including low odors, quick drying, easier cleanup, and reduced toxicity.

A VOC is a volatile organic compound-an organic chemical that evaporates and enters the air at room temperature, commonly found in many paints. VOCs are used in paint as solvents to help with application and drying. VOCs are considered harmful because they can contribute to indoor air pollution and cause health problems such as headaches, dizziness, and even long-term impacts like respiratory issues or cancer.

Modern paints are formulated to have low-VOC or zero-VOC levels to reduce emissions and exposure, which is especially important for indoor air quality. Starting in the 1980s, the trend has continued with the development of low and zero-VOC paints for improved health and environmental safety.

Fortunately, Fairbury residents no longer have to obtain all the ingredients required to mix up small batches of paint for their barns or houses. Consumers can visit a store, purchase high-quality, factory-made premixed paint, take it home, and immediately apply it to their project.

White lead was used to make paint long ago in Fairbury. Jack Tollensdorf operated the Fairbury Paint Store just east of the Bank of Pontiac. John Tollensdorf remembers that his father kept some old white lead cans and then used them to make a historical display in the store.